



Oceanotron

In-situ data server for marine observations

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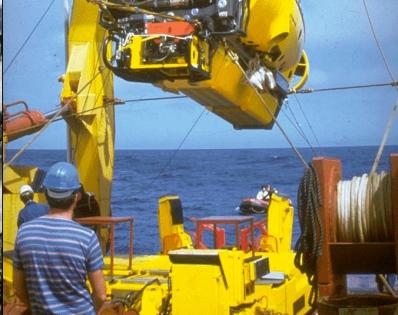
 ifremer

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Ifremer - Observing the ocean

- 7 research vessels (107m to 24m length)
- 2 submarines (up to 6000m depth)
- automatized observatories : floats, buoys, sea floor
- coastal networks operated for 35 years
- networks of ships of opportunity

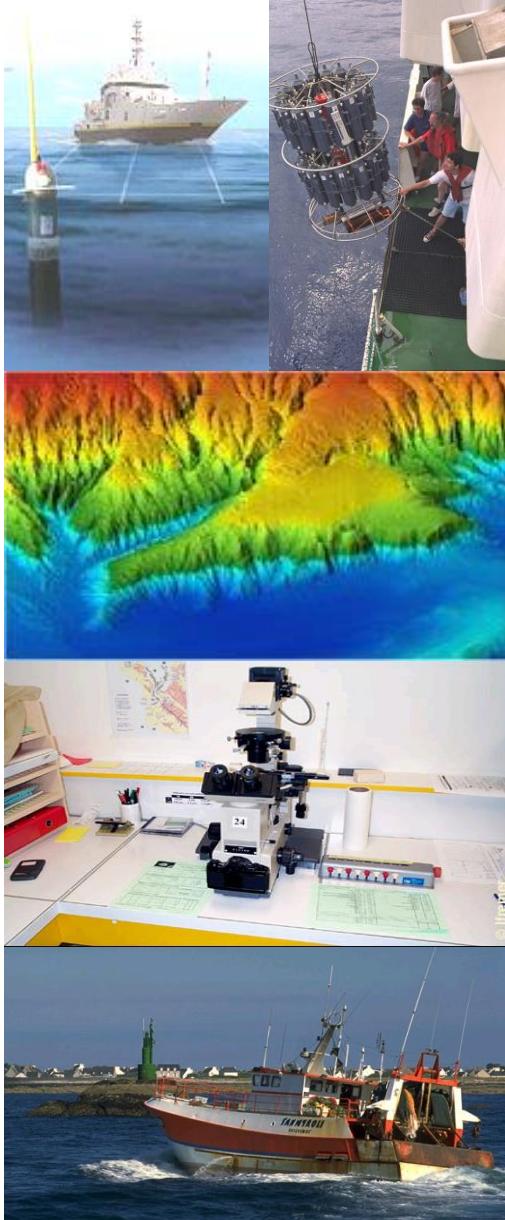
Oceanotion



Ifremer - Main fields of observations

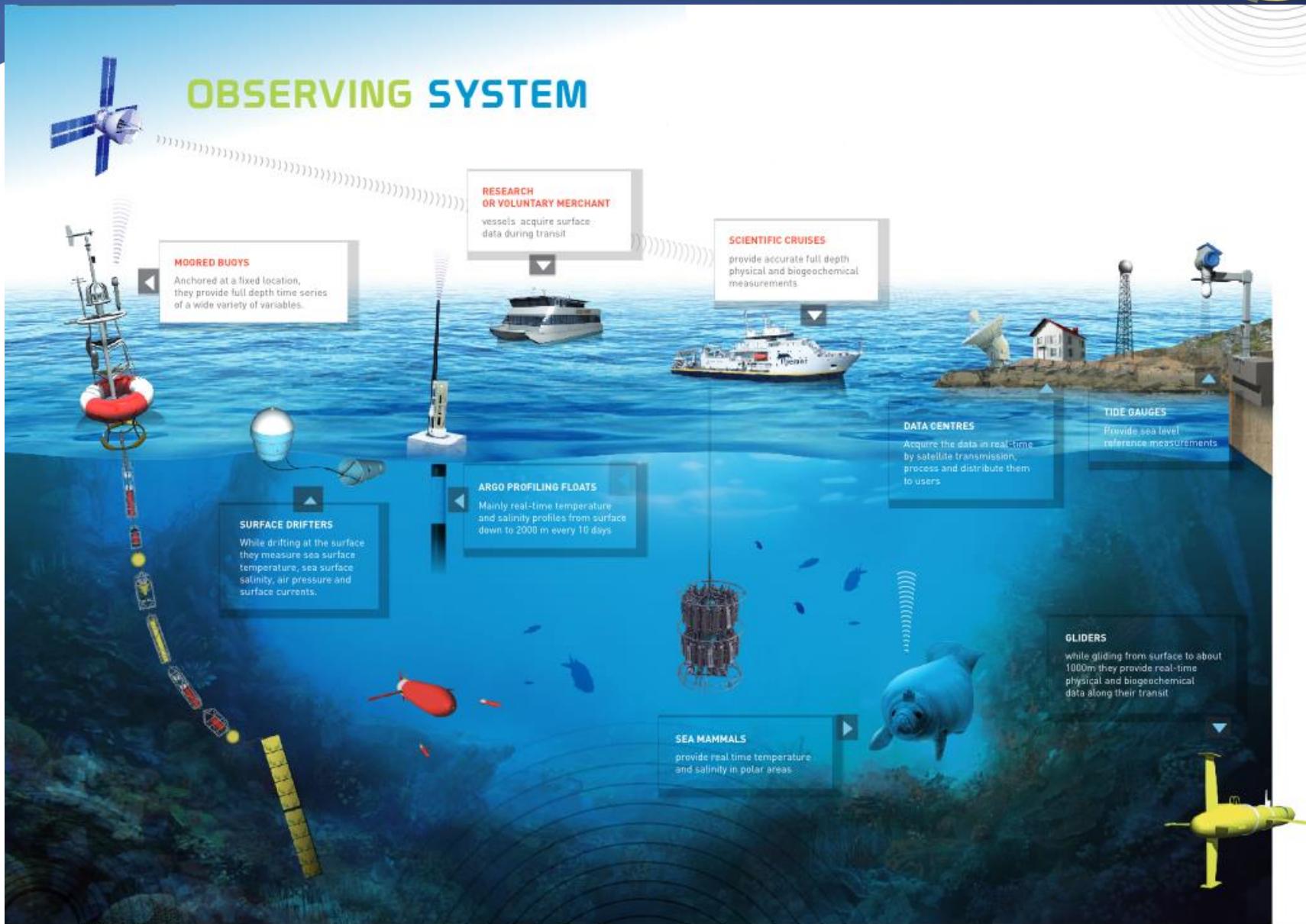


- Physical/Chemical oceanography
- Geophysics, Geology
- Deep sea biology and ecology
- Coastal environment
- Fishery monitoring





Delivered content

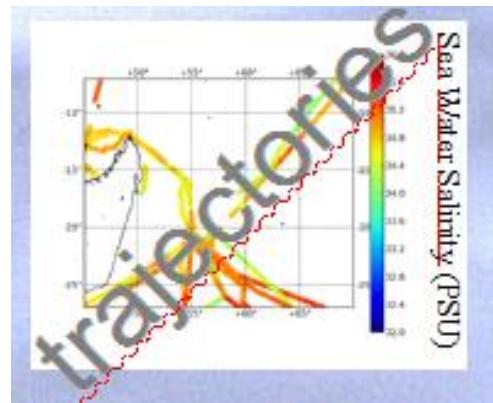
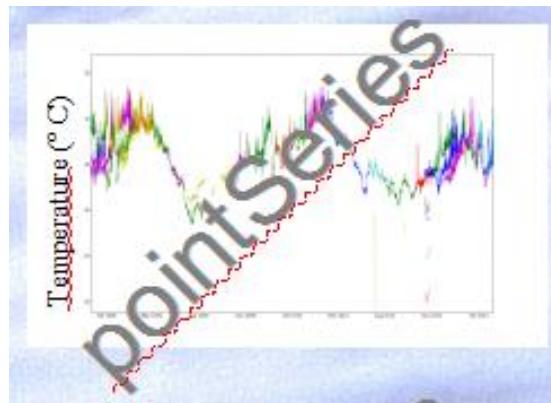
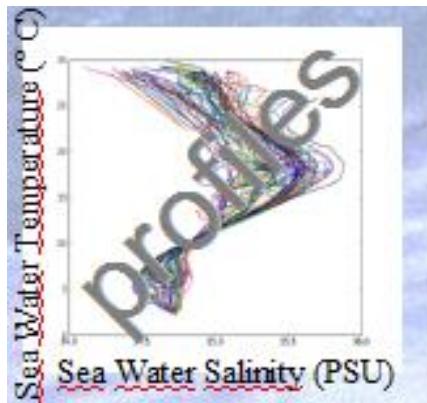




Oceanotron

- Oceanotron is a data server dedicated to marine in-situ observations
- It focus on in-situ water column observations:
 - **Profiles:** CTD, profiling floats (ARGO)
 - **PointSeries:** moorings, including moorings with different vertical levels
 - **Trajectories:** thermo-salinometers, gliders

Oceanotron





Context

- It's used as the in-situ data dissemination server for European projects :
 - MyOcean
 - SeaDataNet
 - Emodnet
- Aggregated data collection (qualified collection of observations)
- Now deployed at 7 different places in Europe
 - At Puertos Del Estado (Madrid, Spain) : <http://maya.puertos.es/oceanotron/Godiva.html>
 - At BSH (Hamburg, Germany) : <http://myocean.bsh.de/oceanotron/Godiva.html>
 - At IMR (Bergen, Norway) : <http://uranus.nodc.no:8080/oceanotron/Godiva.html>
 - At HCMR (Athen, Greece) : <http://espen.hcmr.gr:8080/oceanotron/Godiva.html>
 - At SMHI (Stockholm, Sweden) : <http://myocean.smhi.se/oceanotron/Godiva.html>
 - At Ifremer (Brest, France) : <http://www.ifremer.fr/oceanotron/Godiva.html>
 - At IO-BAS (Varna, Bulgaria) : <http://193.68.190.41:8080/oceanotron/Godiva.html>



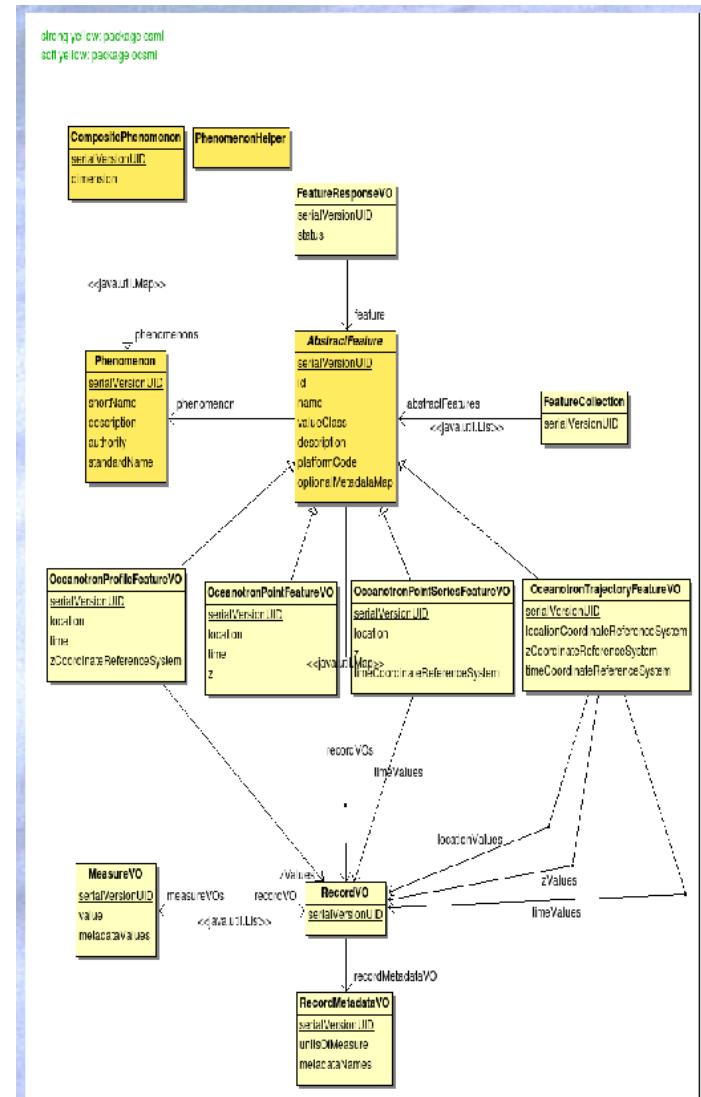


Oceanotron Architecture

- The shared data model has been implemented on the basis of the CSML V2 work.
- It aims at complying with the O&M and Inspire data models.

Oceanotron

Feature type	Observed dimensions
Vertical profile	Z
Point serie	T
Trajectorie	X,Y,Z,T

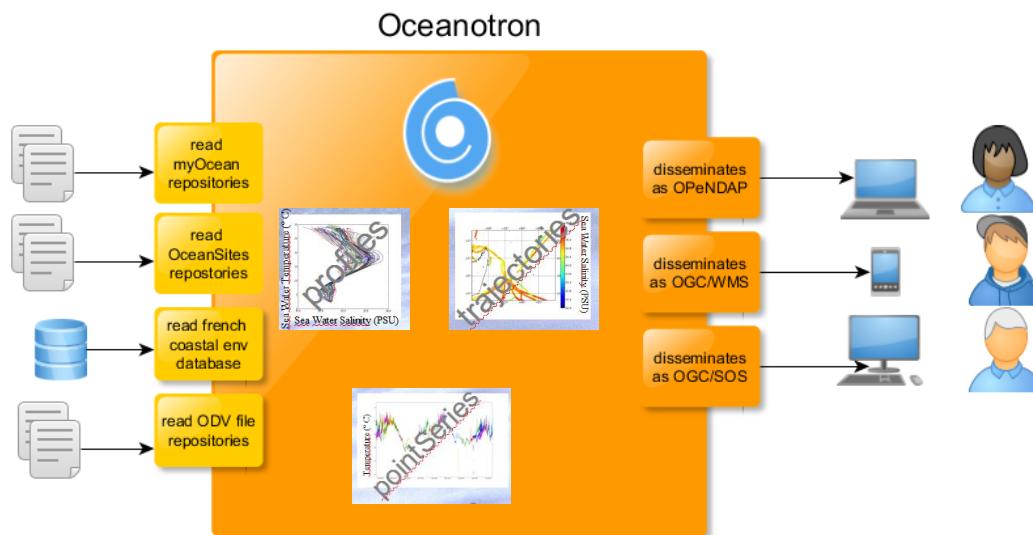




Oceanotron Architecture

- **StorageUnits** : which enable to read specific data repository formats (netCDF/OceanSites, ODV binary format, RDBMS)
- **FrontDesks** : which get external requests and send results for interoperable protocols (OGC/WMS, OpenDAP, OGC/WFS, OGC/SOS)
- **TransformationUnits** : In between a third type of plugin may be inserted which enable ocean business related transformation of the features (for example conversion of vertical coordinates from pressure in dB to meters under sea surface)

Oceanotron





Client example : WMS

- WMS services developed by University of Reading (ncWMS/Thredds)
- It handles 4Dimensions : Latitude, Longitude, Elevation, Time

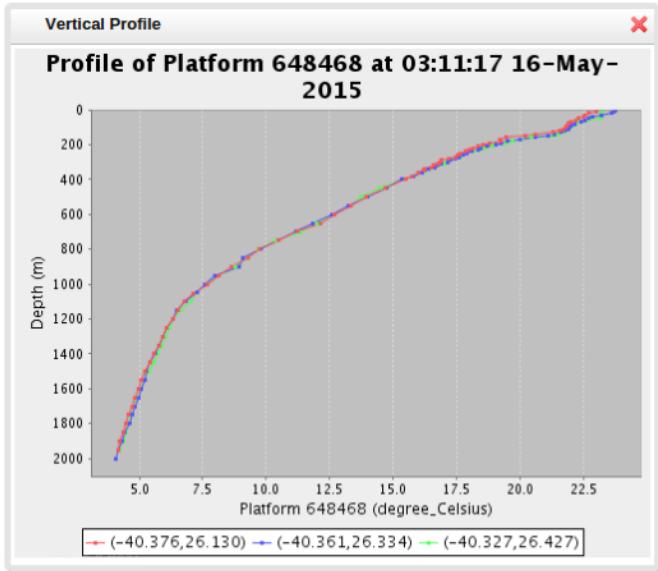
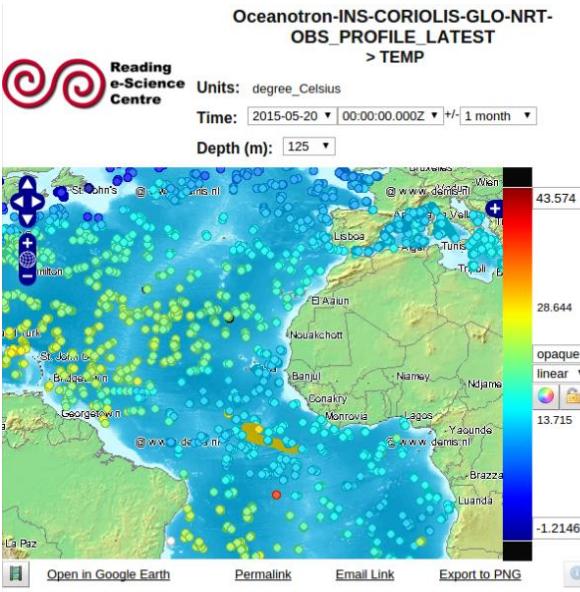




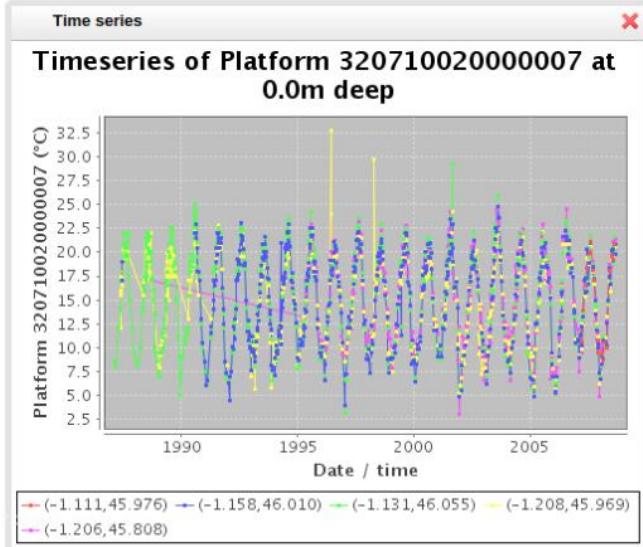
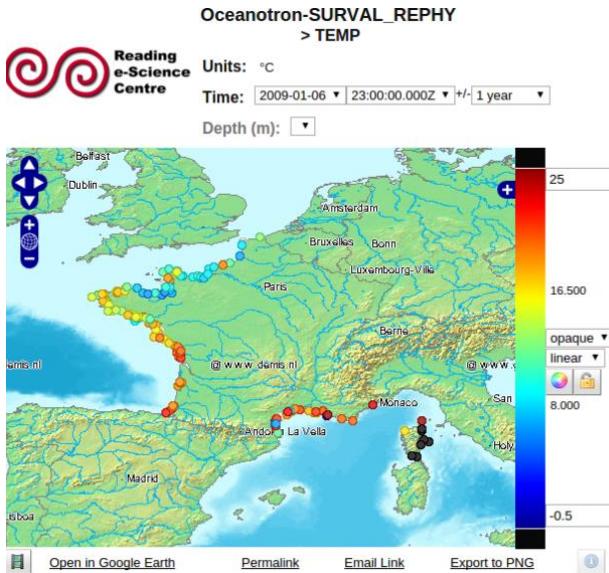
Client example : WMS

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➤ Profile



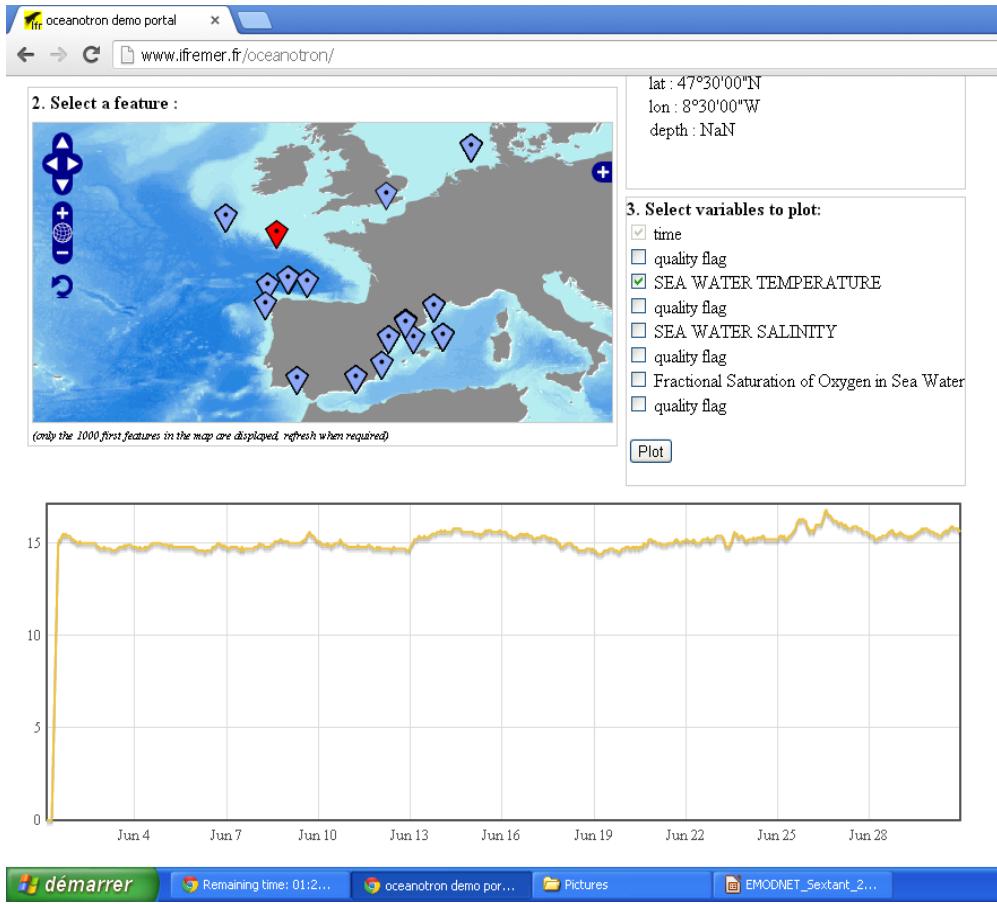
➤ Time-series





Client example : Opendap

- Opendap is a protocol which is mainly used in the domain of oceanography/meteorology





Why an OGC/SOS?

- Often in-situ data observation are available as
 - prepared dataset under ftp
 - dedicated web interface
- No interoperable services
- Need:
 - Interoperable download services
 - mechanism are wanted to manage big volumes
 - asynchronous mechanism
 - Format : netCDF
 - Subsetting of in-situ dataset
 - Advanced data viewing services (need data to plot/graph)
- SOS interface has well-defined
 - temporal, spatial, and thematic filters
 - for near realtime environmental data





SOS protocol

- Implemented interface:
 - Getcapabilities
 - GetObservation
 - Describesensor
 - GetFeatureOfInterest
- Now, it's used for downloading services
- To do: user client interface
 - Location
 - Filtering
 - Dynamic graph





Thank you for your attention

- More details on (source code, documentation):
Forge : <https://forge.ifremer.fr/plugins/mediawiki/wiki/oceanotron>

